Exhibit 3.4.2.1-2
Wallula Power Project

Wetland Delineation, Ratings, And Assessment Of Functions And Values Report

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WALLULA POWER PROJECT
WETLAND DELINEATION, RATINGS, AND ASSESSMENT OF FUNCTIONS AND VALUES REPORT

1.0 INTRODUCTION

Wallula Generation, LLC proposes to construct a natural gas-fueled combustion turbine power plant in Walla Walla County, Washington. The 175.48-acre project site is located adjacent to U.S. Highway 12, about 8 miles southeast of Pasco, Washington and about 5 miles north of Wallula Junction.

The project site slopes generally southwest toward the Columbia River, from about 406 feet above mean sea level (msl) to about 360 feet msl. In this reach, the Columbia River is impounded by McNary Dam, forming Lake Wallula. Construction on McNary Dam began in 1947 and the reservoir began filling in 1953. The reservoir surface elevation generally fluctuates between 335 and 340 feet msl (USACE 2001).

The project area lies in the shrub-steppe zone of the Columbia Basin (Franklin and Dyrness 1973). While once dominated by sagebrush and bunchgrasses, the project site has likely been in use for agriculture, including grazing, dry land farming, and orchard production, since white settlement occurred in the 1840s. Currently, most of the project site is occupied by an irrigated alfalfa (*Medicago sativa*) field. The margins of the irrigated circle are dominated by weedy forbs and grasses and scattered shrubs. This vegetation includes native species, such as big sagebrush (*Artemisia tridentata*) and gray rabbitbrush (*Chrysothamnus nauseosus*); remnant orchard trees, such as plum (*Prunus* spp.) and apple (*Malus* spp.); but is dominated by weedy, invasive species, such as tumble mustards (*Sisymbrium altissimum*), diffuse knapweed (*Centaurea diffusa*) and cheatgrass (*Bromus tectorum*).

Several natural resource investigations have been completed for the Wallula Power Project. One of these, an initial wetland evaluation (SEA, Incorporated 2001), was conducted to determine whether the six wetlands identified at the project site would fall under the regulatory jurisdiction of the U.S. Army Corps Of Engineers (USACE) and Washington Department Of Ecology (WDOE).

The evaluation was based on an extensive review of existing information and supplemented by a series of field visits in August, October and November 2000. The report concluded that none of the wetlands would be considered jurisdictional. Five (Wetlands A, B, C, D and E) were constructed for purposes of irrigation and are maintained by irrigation water, and although the sixth wetland (Wetland F) is not man-made, it appears to be man-induced and maintained by run-off from upslope irrigation.

The U.S. Army Corps Of Engineers does not regulate activities in wetlands that were constructed in uplands, unless the purpose for which they were constructed has been abandoned for more than ten years (USACE 1987). Since all of the wetlands occurring on the project site were constructed (or incidentally developed) in uplands and are still maintained by irrigation, none would be considered jurisdictional.

WDOE's regulation of wetlands is similar to that of USACE. However, WDOE considers wetlands that were created unintentionally to be jurisdictional, even if created in uplands, and also considers

wetlands with hydraulic continuity to streams to be jurisdictional, under the state of Washington Shoreline Management Plan (Chapter 173-22 WAC).

The three wetland evaluation tasks described below were conducted in response to WDOE's concerns regarding the protection of project-area wetlands. These tasks included 1) delineation of wetland boundaries; 2) ratings to determine categories for protection; and 3) assessment of functions and values.

The results of this evaluation were used to establish buffers around each wetland, in compliance with state of Washington guidance and local regulations. The project will be designed to avoid impacts on wetlands, regardless of jurisdiction. No project features (e.g., buildings, pipelines, transmission lines, access roads) will be constructed within wetland buffers, and the Applicant does not propose any activities that would involve disturbance, dredging or filling of wetlands. For these reasons, no federal or state permits for work in wetlands will be required.

2.0 METHODS

The wetlands addressed in this report include four (Wetlands B, C, D and F) that were identified during initial wetland evaluations in 2000 (SEA, Incorporated 2001), and two wetlands (Wetlands G and H) that were identified during the June, 2001 field work. Wetlands A and E (identified in 2000) are not included in this report, since WDOE agreed that further evaluation was not necessary.

The first step in conducting the wetland tasks was to compile and review existing information. Site-specific data needed to complete the tasks was collected during a field visit on June 12, 13 and 14, 2001.

Delineation

Wetlands were delineated in the field on June 12, 13 and 14, 2001, using the U.S. Army Corps Of Engineers Wetlands Delineation Manual (USACE 1987) and Washington State Wetlands Identification and Delineation Manual (WDOE 1997). The method selected for the delineation was the routine on-site determination methodology for sites under 5 acres in size.

Numerous weedy, invasive plants have established in the project area. Exotic species that could not be keyed using *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973) or *Manual of the Grasses of the United States* (Hitchcock 1971) were identified using *Weeds of the West* (Whitson et al. 1996). Appendix A contains a list of plants encountered in the field, together with their wetland indicator status. Plants identified as having a facultative (FAC) wetland indicator status are those found in wetlands and uplands with about equal frequency. Facultative upland (FACU) species are more often found (67 to 99 percent of the time) in uplands, while facultative wetland (FACW) species are more often found in wetlands. Wetland obligate species (OBL) are always (more than 99 percent of the time) found in wetland settings.

Wetland indicator status was determined using lists developed by the U.S. Fish And Wildlife Service (USFWS) in 1988 and 1993 (Reed 1988; Reed 1993). The status of plants not shown on these lists was determined based on a USFWS 1996 draft document (Kartesz 1996) and WDOE's manual for assessing the functions and values of Columbia Basin depressional wetlands (Hruby and Stanley 2000).

The soil series recorded at each wetland is based on maps presented in the Walla Walla County Soil Survey (Harrison, et al. 1964). A soil probe and soil pits were used to look for indicators of hydric soils and/or wetland hydrology. Soil colors were recorded using Munsell color charts (Munsell Color 1975).

Vegetation, hydrology and soils data for each plant community present in each wetland were recorded on routine determination forms. Information on these forms was used to delineate the boundary of each wetland. The boundaries were then marked with numbered wooden stakes and flagged for surveying. Western Pacific Engineering (WPE) completed boundary surveys on June 29, 2001 and prepared a delineation map, which also shows wetland buffers (Figure 3.4.2-1.1). Appendix B contains the completed wetland delineation forms.

Ratings

Wetland categories were determined by applying the rating system developed by WDOE for eastern Washington (WDOE 1991). This approach includes both office and field components. Office and field rating forms for each wetland are presented in Appendix C.

Completion of the office rating form uses information about the occurrence of rare plants, fish and wildlife, including species with special status at the federal or state level. The occurrence of high-quality native wetlands, wetlands of local significance, and/or WDFW-designated priority habitats and species is also incorporated into the office forms. Information needed to complete the office forms was obtained through review of agency database searches conducted in support of study plans for wildlife and botanical surveys to be conducted in spring, 2001 (SEA, Incorporated 2001b).

The Walla Walla County Critical Areas Ordinance (Chapter 18.08) was also reviewed to identify any wetlands of local significance. The nearest critical wetlands are located about 2 miles north of the project area and about 5 miles south of the project area (USACE 2000). The designation of these wetlands as critical is based on the presence of bald eagle roosts.

The field rating form relies on site-specific data. Data collected in the field to complete this form focuses on ecological characteristics, such as species and structural diversity, buffer integrity, and connection to other habitats.

Functions and Values

Wetland functions and values were assessed using the Wetland and Buffer Functions Semi-Quantitative Assessment Methodology, or SAM (Cooke Scientific Services, Incorporated 2000). SAM is a systematic approach to scoring the capacity of a wetland to perform eight wetland functions. These include 1) flood/stormwater control; 2) base flow/groundwater support; 3) erosion/shoreline protection[1]; 4) water quality improvement; 5) natural biological support; 6) general habitat functions; 7) specific habitat function; and 8) cultural and socioeconomic values. SAM also incorporates information about wetland buffers to estimate how well buffers may be contributing to maintenance of wetland functions.

[1] Because none of the wetlands are located along the shorelines of streams, rivers or lakes, the erosion/shoreline protection function was not evaluated for this project.

Insert Figure 3.4.2-1.1. Wetland Delineation Map

Wetland loss in the drainage basin was assumed to be less than 20 percent, since numerous wetlands have been created as a result of irrigation and impoundments on the Columbia River. The area of impervious surface in the drainage basin was assumed to be less than 20 percent, since the basin is dominated by agricultural land use.

Site-specific data were collected in the field as part of the delineation and rating steps of this task, as described above. Completed SAM forms are provided in Appendix D of this report.

3.0 RESULTS

Nine wetlands were delineated. Each wetland includes one or more of the following Cowardin (Cowardin et al. 1979) wetland classes: palustrine scrub-shrub (PSS); palustrine emergent marsh (PEM), and palustrine open water (POW). Application of Cowardin water regime modifiers was complicated by the fact that all these wetlands are supported by irrigation. Results of the wetland delineation, rating task, and functions and values assessment are described below for each of the wetlands delineated. Results are summarized in Table 1, below.

Table 1
Summary Of Wetland Characteristics, WDOE Ratings And SAM Scores

	Wetland B	**Wetland C**	**Wetland D**	**Wetland F**	**Wetland G**	**Wetland H**	**Average SAM Scores**
Acres	0.35	0.67	2.33	0.27	0.25	0.26	
Cowardin Class	PEM/PSS	POW/ PEM	POW/ PEM/ PSS	PEM	PEM	PEM	
WDOE Category	III	III	III	III	IV	IV	
Flood/Stormwater Control	40	53	53	40	40	40	44
Base Flow/ Groundwater Support	47	60	60	47	47	47	51
Water Quality Improvement	60	53	60	60	60	60	59
Natural Biological Support	50	50	56	50	39	39	47
Overall Habitat Functions	44	56	67	44	33	33	46
Specific Habitat Functions	47	60	60	47	33	33	47
Cultural/ Socioeconomic Functions	33	33	33	33	33	33	33

Hydrology at wetland B is maintained by irrigation from the alfalfa field upslope. Hydrology may also be maintained by leakage from the pipes running underneath the wetland. The hydrologic regime would be considered seasonally flooded (March 15 through October 15) due to irrigation.

Soils at wetland B are mapped as Quincy-Duneland complex. These soils are excessively drained or somewhat excessively drained, and are not listed as hydric (NRCS 2000). In addition to severely eroded Quincy soils, the complex includes blowouts and small dunes.

Inspection of soils in a pit dug where dominant species are Russian olive and white top revealed dry sandy loam with small cobbles and no indicators of wetland hydrology or hydric soils. Where the

abundance of poison hemlock increased, soils were moist with a low chroma (10YR3/2) and a few bright mottles (10YR5/6) at 18 inches below the surface, and streaks of dark organic material in the top 2 inches.

Wetland B is classified as a Category III wetland, based on its small size, low diversity, and isolation from other habitats. The wetland B site does not support rare plants, fish or wildlife species, or priority habitats or species.

SAM scores for wetland B functions ranged from 33 percent for Cultural/Socioeconomic Functions to 60 percent for Water Quality Improvement. In addition to its small size and position low in the watershed, wetland functions are limited by little diversity and the absence of year-round open water.

Wetland C

Wetland C is located along the western boundary of the project area at about elevation 363 feet msl. It occupies about 0.67 acres. Wetland C is not shown on NWI maps and is not evident on aerial photos taken in 1941. Wetland C is an irrigation pond that was constructed in the late 1970s to store water for nearby orchards. It can be characterized as POW, with a narrow fringe of PEM surrounding it.

The pond is bordered on the east by the project access road. Except on the eastern border, it is surrounded by a rock and earth berm. The berm itself is sparsely vegetated with big sagebrush, diffuse knapweed, and grasses, including Idaho fescue (*Festuca idahoensis*), western fescue (*F. occidentalis*) and cheatgrass. The eastern edge is bordered by the access road. Areas to the west and south of the pond, outside the berm, are dominated by tall white top and Canadian thistle (*Cirsium arvense*), with a small patch of native grasses that includes basin wildrye (*Elymus cinereus*) and bluebunch wheatgrass (*Agropyron spicatum*).

Shrubs around the pond include Russian olive and coyote willow (*Salix exigua*). The dominant herbaceous species include reed canarygrass (*Phalaris arundinacea*), cattails (*Typha latifolia*) and hardstem bulrush (*Scirpus acutus*).

Hydrologic support for this wetland is provided primarily by drainage from the irrigated alfalfa field located upslope of the wetland. No surface inflows were observed.

Soils at Wetland C are mapped as Quincy-Duneland complex. As described above, Quincy soils are excessively drained to moderately excessively drained. A soil pit dug at the southeast corner of the pond exhibited dark grayish brown, gleyed soils. Soils were saturated at a depth of 12 inches below the surface. Soils in a pit dug on the berm 2 feet above the first pit were dry and no hydrologic or hydric soil indicators were observed.

Soils were also examined in two pits in a swale just outside the berm on the south side of the pond, since the presence of FAC and FACW species in a topographic low point suggested the potential presence of wetlands. No indicators of hydric soils or wetland hydrology were observed in these pits, but several irrigation pipes were observed that likely maintain moist soil conditions.

Wetland C is rated as a Category III wetland. Like Wetland B, the small size, low diversity and isolation of the wetland limit its ability to perform several wetland functions. These limitations were reflected in SAM scores for Wetland C.

Using the SAM, the score for Wetland C Cultural/Socioeconomic Functions was 33 percent. The highest scores (60 percent for both) were for Base Flow/Groundwater Support and Specific Habitat Functions, since Wetland C contains water year-round and provides habitat that would be considered of moderate value for birds and mammals.

Wetlands D and DA

Wetland D is located in the northwestern corner of the property. This wetland consists of two ponds that were constructed to store irrigation water for nearby orchards, and a drainageway between them. The elevation of the south pond is about 365 feet msl. The north pond is somewhat lower, at about 364 feet msl. The ponds and drainageway are not mapped in the NWI inventory, and none of these features are evident on 1941, 1953, or 1960 air photos. The total area of Wetland D is about 2.33 acres.

The ponds can be characterized as POW bordered by a narrow band of PSS. The drainageway is classified as PEM, and is also bordered by PSS. PEM is also present between the access road and the lower (south) pond.

Tree and shrub species around the ponds include Russian olive, weeping willow (*Salix babylonica*), and native willows, such as Pacific willow (*S. lucida*), coyote willow (*S. exigua*), and peachleaf willow (*S. amygdaloides*). Patches of common reed (*Phragmites australis*) and reed canarygrass dominate the higher elevations in PEM. Purple loosestrife (*Lythrum salicaria*) and tall white top are most common just below this elevation, while patches of cattails and hardstem bulrush, along with purple loosestrife, occupy the wettest soils.

Wetland DA (about 0.1 acres in size) lies in a north-south depression between Wetland D and the project access road. It appears to have been formed as a result of excavation to construct the Wetland D berm. This PEM wetland is dominated by a mix of white top and goldenrod (*Solidago spp.*), with American three-square (*Scirpus americanus*) and Olney's bulrush (*S. olneyi*) present along the bottom of the depression.

Water entering the upper (south) pond of Wetland D drains, at high flows, to the lower (north) pond. At high flows, water drains from the north pond through a culvert near the northwest corner of the pond. Water then passes into the ditch paralleling U.S. Highway 12. About 50 feet to the north, water enters a culvert under the access road and continues north about 200 feet down the ditch before entering a culvert under the highway and draining into an extensive wetland complex managed as part of the McNary National Wildlife Refuge.

Hydrologic support to Wetland DA appears to be provided entirely by run-off from upslope irrigation. Water appears to collect in the topographic depression below the road that supports Wetland DA.

Soils at both Wetland D and DA are mapped as Quincy loamy fine sand over gravel (Harrison et al. 1964). These soils are not listed as hydric (NRCS 2000).

Soil pits were dug at five locations in Wetland D and were examined using a soil probe at five locations. In areas qualifying as wetlands, soils were dark grayish brown with a low chroma (3/2) and bright mottles (4/6). Drainage patterns observed in the field and on aerial photos were considered positive indicators of wetland hydrology.

Soils examined in a pit dug at the bottom of the Wetland DA depression showed a hard organic pan at about 10 inches below the surface. Soil colors were the same as in Wetland D, and were moist but not saturated at 18 inches.

Wetlands D and DA were rated as a single wetland, and met criteria for Category III. Although several wetland classes are present, including year-round open water, wetland values are limited by the high percentage of exotic, weedy species. Also, as for other project wetlands, the small size and isolation of Wetland D prevents any higher classification.

Wetlands D and DA were also scored as a single wetland for the SAM assessment. The low score was 33 percent for Cultural/Socioeconomic Functions. The highest score was 67 percent for Overall Habitat Functions, due largely to the presence of three wetland classes and year-round open water.

Wetlands FA, FB and FC

Based on review of 1998 aerial photography, Wetland F was initially identified as a PSS wetland of about 4 acres, located at the northwest corner of the Jaussaud property, just south of the project site. Review of NWI mapping shows this as a single PEM wetland of about 3 acres. In the field, three separate PEM wetlands were delineated, separated by topographic relief. Higher elevations were not delineated as wetlands, based on the absence of wetland hydrology and soils, although FAC vegetation, including cottonwood (*Populus deltoides*) and Russian olive, was dominant. A small patch of FACW vegetation (poison hemlock) was also observed, but again, wetland hydrology and soils were absent.

Wetland FA is less than a tenth of an acre in size, located at about 360 feet msl. It is characterized by a mix of cattails, Canadian thistle, goldenrod, and showy milkweed (*Asclepias speciosa*). Wetland FB, about 0.2 acres in size, is dominated by hardstem bulrush, reed canarygrass, red orache (*Atriplex rosea*), Canadian thistle and goldenrod. Wetland FC, about 0.27 acres, supports similar vegetation, with a higher percentage of reed canarygrass and cattails.

Wetland hydrology appears to be maintained by irrigation from upslope. In addition to the project site alfalfa field, water would also be likely to drain to this wetland from the Simplot stock tanks. Drainage patterns observed on 1998 air photos and on the ground indicate wetland hydrology.

Soils at the three wetland F sites are mapped as Quincy-Duneland complex. As described above, Quincy soils are excessively drained to moderately excessively drained. At FA, a series of three soil pits were dug along a gradual slope down into the depression that supports hydrophytic vegetation. Soils were grayish brown with hue and chroma of 3/3 in the upper two pits and 3/2 in the lower pit. Soils in the lower pit were saturated at 18 inches. Soils at FB and FC were similar, but lighter (4/4).

All three of these wetlands were rated together and classified as Category III. Although their small size, isolation, and dominance by FAC species would suggest they should be classified as Category IV, they are dominated by species other than those required to meet Category IV criteria.

All three wetlands (FA, FB and FC) were assessed as a single wetland using the SAM scores. The low score was 33 percent for Cultural/Socioeconomic Function. The high score was 60 percent for Water Quality Improvement.

Wetland G

Wetland G is a small (about 0.25 acres) PEM wetland southeast of Wetland B along the project site access road. It is not evident on air photos taken in 1941 and is not mapped in the NWI database. It lies in a depression paralleling the access road, which may have resulted in part from road construction.

Wetland G is dominated by Canadian thistle. A high proportion of white top is also present, and hardstem bulrush is scattered throughout.

Wetland hydrology is supplied by irrigation water from the alfalfa field immediately upslope of the wetland. Water pools along the margin of the field on the east side of the road and saturates soils in the road.

Soils at Wetland G are mapped as Quincy-Duneland complex. Soils were examined in one pit, and by using a soil probe. Soils were fine, saturated, and grayish brown in color (10YR3/2). Other than drainage patterns, no indicators of wetland hydrology or hydric soils were observed.

Wetland G is classified as a Category IV wetland. The classification is based on its small size, lack of diversity, isolation, and dominance by Canadian thistle.

The SAM scores for Wetland G were 33 percent for Overall Habitat Functions and Specific Habitat Functions, as well as for Cultural/Socioeconomic Functions. The high score was 60 percent for Water Quality Improvement.

Wetland H

Wetland H is a small (about 0.25 acres) PEM wetland located between Wetland D and Wetland C, just west and downslope of the alfalfa field. It is not visible on aerial photos taken in 1941, and is not mapped as wetland in the NWI database. It lies in a small depression paralleling the project access road.

Dominant vegetation in Wetland H is reed canarygrass, Canadian thistle, purple loosestrife, and white top. Cattails, hardstem bulrush and poison hemlock are also present, and a few shrub saplings (peach-leaf willow and coyote willow) were also observed.

Wetland hydrology is provided by irrigation of the upslope alfalfa field. Subsurface drainage appears to collect in a wide swale running parallel to the ditch along the road. Standing water was observed at several points along both edges, and in some cases across, the road.

Soils at wetland H are mapped as Quincy-Duneland complex. Soils examined in one pit showed bright mottles (7.5YR4/4) in a dark grayish brown matrix (10YR3/2), and some fine roots with rhizospheres. Soils were moist but not saturated.

Wetland H was rated as a Category IV wetland, for the same reasons identified above for Wetland G. In this case, the dominant species is reed canarygrass, rather than Canadian thistle.

SAM scores for wetland H were 33 percent for Overall Habitat, Specific Habitat, and Cultural/Socioeconomic functions. The highest score was 60 percent for Water Quality Improvement.

4.0 CONCLUSIONS

A total of nine wetlands were delineated on the project site and the adjacent Jaussaud property. Each wetland is small, and the total wetland area is less than 5 acres. Each of these wetlands appears to be man-made or induced by human activities, based on evidence observed in the field. This includes signs of excavation, grading, plowing, imported rock fill, a complex array of subsurface and surface irrigation pipes, and the presence of a 150-acre irrigated alfalfa field located directly upslope of all the wetlands. The wetlands form a roughly north-south chain, occupying a depression between the irrigation circle and U.S. Highway 12. The irrigation circle within the project area is only one of hundreds of irrigation circles and other irrigation-dependent land uses that have been established along the terraces and slopes above Lake Wallula. Recent groundwater studies provide additional perspective on the movement of this water.

On a regional (Pasco Basin) level, water lost from irrigation canals and irrigated fields accounts for 84 percent of groundwater recharge, while precipitation accounts for only 12 percent (Pacific Groundwater Group 2001). Locally, groundwater recharge occurs as a result of irrigation and unused Simplot stock water. Groundwater moves south and west across the project area. Studies conducted in May, 2001 showed depths to the water table ranging from about 21 feet below ground surface on the eastern edge of the site to less than 4 feet below ground surface on the western edge, with discharge to surface waterbodies and wetlands east of U.S. Highway 12.

Both the regional studies and local measurements of aquifer monitor wells indicate that groundwater elevations are, at times, higher than river elevations. Because flows within the gravel aquifer are unimpeded, net groundwater discharge occurs from the aquifer to the Columbia River at all times of the year, except September, October and November, when net groundwater discharge occurs from the river to the aquifer. As a result, all but the shallowest soil layers are nearly always saturated.

With construction of the Wallula Power Plant, existing patterns of water withdrawal, storage and distribution would change. Net groundwater discharge would occur to the river from the aquifer at all times. The net discharge would be smaller from January through June, and greater from July through December than under current conditions (Pacific Groundwater Group 2001). Some change in wetland characteristics would be expected to result. Woody FAC wetland species, such as cottonwood, Russian olive, and some willows, would be least affected, while herbaceous OBL species, such as hardstem bulrush, cattails, and American three-square would be unlikely to persist. Some PEM wetland would likely convert to PSS or to upland, depending on the contribution of stock-pond overflow from the Iowa Beef Processors, Incorporated slaughterhouse and other upslope irrigation farming.

In a highly disturbed habitat with very low, uniform structure, patches of tall shrub (wetland or upland) can add an important element of diversity. Shrub thickets provide important roost, perch and nest opportunities for both songbirds and raptors. They also provide cover, forage and denning opportunities for small mammals, and hiding and thermal cover for larger mammals. For this reason, protection of buffer zones around existing wetlands would help to maintain habitat values for wildlife in the area.

Seven of the nine delineated wetlands were rated Category III, and two were rated Category IV. WDOE guidance for protection is to maintain 50 to 100-foot buffers around Category III wetlands, and 25 to 50-foot buffers around Category IV wetlands.

Scores for all wetland functions and values were low to moderate. Scores for cultural/socioeconomic functions were low, due to private ownership, low aesthetic value (based on their artificial origin and dominance by weed species) and lack of opportunities for recreation or education.

Scores for flood/stormwater control averaged 44 percent. The function of project wetland in storing floodwater or moderating flood flows was limited by small size, shallow depth, position low in the watershed and lack of forested cover.

Scores for base flow/groundwater support and water quality improvement averaged 51 percent and 59 percent, respectively. Again, the small size, shape, and position low in the watershed limited scores for these functions. Also contributing to the low scores was the sandy substrate and amount of agricultural development in the basin.

Scores for natural biological support, overall habitat functions, and specific habitat functions averaged 47, 46 and 47 percent, respectively. Scores were low due to the small size of the wetlands and relative lack of diversity, and the presence of year-round water in only two of the wetlands. Scores were also limited by the disturbed condition of surrounding habitat and the lack of protected travel corridors for wildlife. Highway 12 borders all the wetlands and prevents protected access to large areas of undeveloped, undisturbed habitat within the McNary National Wildlife Refuge just west of the highway.

The potential for the project to affect wetlands, and measures the Applicant will take to avoid wetland impacts, can be summarized as follows:

Delineation: None of the wetlands would be considered to fall within federal jurisdiction under Section 404 of the Clean Water Act. Based on hydraulic continuity of groundwater with wetlands along Lake Wallula, they would be considered to fall within state jurisdiction under the Shoreline Management Act. No activities are proposed that would require either federal or state permits for work in wetlands.

Ratings: Regardless of jurisdictional status, the Applicant proposes to protect buffers around these wetlands, consistent with WDOE guidance for maximum buffer widths for Category III and IV wetlands.

Functions and Values: Under existing conditions, all categories of functions and values are low to moderate, with no score for any function for any wetland being higher than 67 percent. The conversion of existing irrigated agriculture to power production will alter hydrologic support to these wetlands, and it is likely that their characteristics will change. However, other sources of irrigation upslope of these wetlands are likely to continue to supply subsurface flows that will support many of the weedy FAC species that currently dominate the project site, including PSS and/or small patches of upland shrub communities. Protection of buffers around the wetlands will benefit wildlife in the vicinity, even if the wetlands become drier. The function of these areas in terms of their ability to provide flood and stormwater control, baseflow and groundwater support, and water quality improvement will not be measurably affected, since their current function is similar to upland wetland sites.

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Appendix A

List Of Plants Encountered In The Vicinity Of Project Site Wetlands
June 2001

Appendix A

Plants observed within the Wallula Power Project area in the vicinity of Wetlands B, C, D, F, G and H during field visits on June 12-14, 2001.

Scientific Name[1]	**Common Name**	**Wetland Indicator Status**[2]
Agropyron spicatum	bluebunch wheatgrass	UPL
Agrostis scabra	rough bentgrass	FAC
Agrostis stolonifera	creeping bentgrass	FAC
Anthriscus caucalis	burr chervil	NL
Arctium minus[1]	common burdock	NI in northwest; UPL or FACU- nationally
Artemisia tridentata	big sagebrush	NL
Asclepias speciosa	showy milkweed	FAC+
Asparagus officinalis	asparagus	FACU
Atriplex rosea	red orache	FACU-
Brassica kaber	wild mustard	NL
Bromus mollis	soft brome	NL
Bromus tectorum	cheatgrass	NL
Capsella bursa-pastoris	shepherd's purse	FACU
Cardaria draba	hoary white top	NL
Centaurea diffusa	diffuse knapweed	NL
Centaurea repens	Russian knapweed	NL
Centaurea solstitialis	yellow starthistle	NL
Chenopodium album	lamb's quarters	FAC
Chrysothamnus nauseosus	rabbitbrush	NL
Cirsium arvense	Canadian thistle	FACU+
Cirsium vulgare	bull thistle	FACU
Conium maculatum	poison hemlock	FACW-
Conyza canadensis	horseweed	FACU
Dactylis glomerata	orchardgrass	FACU
Dipsacus fullonum	common teasel	FAC
Eleagnus angustifolia	Russian olive	FAC
Eleocharis palustris	common spikerush	OBL
Elymus cinereus	basin wildrye	FAC
Epilobium angustifolium	fireweed	FACU+
Epilobium watsonii	Watson's willow-herb	NL
Equisetum arvense	common horsetail	FAC
Erodium cicutarium	redstem filaree	NL
Festuca idahoensis	Idaho fescue	FACU
Festuca occidentalis	western fescue	NL
Festuca octoflora	six-weeks fescue	NL
Festuca ovina	sheep fescue	FACU+
Galium aparine	cleavers	FACU
Heliotropium curassavicum	salt heliotrope	OBL
Hemizonia pungens	spikeweed	UPL
Hordeum depressum	meadow barley	FACW
Hordeum jubatum	foxtail barley	FAC+
Juncus balticus var. vallicola	baltic rush	OBL

***Scientific Name*[1]**	**Common Name**	**Wetland Indicator Status[2]**
Juncus torreyi	Torrey's rush	FACW+
Kochia scoparium	kochia	FAC
Lactuca spp.	wall lettuce	FAC to FACU
Lamium purpureum	purple henbit	NL
Lapsana communis	nipplewort	NI in northwest; FAC nationally
Lepidium latifolia	tall whitetop	FAC
Lythrum salicaria	purple loosestrife	FACW+
Malus spp.	apple (cultivated species)	
Malva neglecta	common mallow	NL
Matricaria matricariodes	pineappleweed	FACU
Melilotus alba	white sweet clover	FACU
Nepeta cataria	catnip	FAC
Panicum capillare	witchgrass	FACU+
Phalaris arundinacea	reed canarygrass	FACW
Phragmites australis	common reed	FACW+
Pinus ponderosa	Ponderosa pine	FACU-
Plantago lanceolata	lance-leaved plaintain	FAC
Poa pratensis	Kentucky bluegrass	FAC TO FACW
Poa spp.	bluegrass species	FAC to FACW
Polypogon monspeliensis	rabbitfoot polypogon	FAC
Populus deltoides	eastern cottonwood	FAC
Populus nigra	Lombardy poplar	NL
Prunus spp.	plum, cherry (cultivated species)	NL
Ranunculus cymbalaria	shore buttercup	FAC
Rosa spp.	rose (cultivated species)	FAC to FACU
Rosa woodsii	Wood's rose	FAC
Rumex acetosella	red dock	FACU+
Rumex crispus	western dock	FAC+
Salix babylonica	weeping willow	FAC to wetter
Salix amygdaloides	peachleaf willow	FACW
Salix exigua	coyote willow	OBL
Salix lucida	Pacific willow	FACW+
Salsola kali	tumbleweed	FACU
Scirpus acutus	hardstem bulrush	OBL
Scirpus americanum	American three-square	OBL
Scirpus olneyi	Olney's bulrush	NL
Scirpus spp.	bulrush species	OBL
Scutellaria spp.	skullcap species	range from UPL to OBL; this species observed in saturated soils
Secale cereale[1]	rye	NL
Sisymbrium altissimum	tumble mustard	FACU-
Sisymbrium loeselii	Loesel tumble mustard	NL
Solanum dulcamera	bittersweet nightshade	FAC
Solidago spp.	goldenrod	FACU

Scientific Name[1]	**Common Name**	**Wetland Indicator Status**[2]
Sphaerophysa salsula	Swainsonpea	FAC
Taraxacum officinale	common dandelion	FACU
Thlaspi arvense	field pennycress	NI; UPL nationally
Tragopogon dubius	western salsify	NL
Typha latifolia	common cattail	OBL
Urtica dioica	stinging nettle	FAC+
Verbascum thapsus	common mullein	NL
Veronica spp.	speedwell	range from UPL to OBL; this spp. observed in saturated soils
Xanthium strumarium	common cocklebur	FAC

[1] Reported in Smayda 2001.

[2] Wetland indicator status shown for each species is based on USFWS lists (Reed 1988; Reed 1993). Status for species not included in those lists was taken from the USFWS draft list (Kartesz 1996), still in review, and Hruby et al. 2000.

Appendix B

Wetland Delineation Forms

Appendix C

Wetland Rating Forms

Appendix D

SAM Scores